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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,470	03/03/2005	Hidekazu Tanaka	12480-000102/US	9383
30593	7590	03/14/2006		
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195				
			EXAMINER TAYLOR, EARL N	
			ART UNIT 2818	PAPER NUMBER

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/526,470	Applicant(s) TANAKA ET AL.	
	Examiner Earl N. Taylor	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3 March 2005 - 13 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action acknowledges is in response to papers filed 3 March 2005 through 7 April 2005:

- Claims 1-10 pending
- Claim 6 cancelled

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

This office acknowledges receipt of the following items from the applicant: Information Disclosure Statements (IDS) filed on 3 March 2005, 7 April 2005 and 13 December 2005. The references cited on the PTOL 1449 forms have been considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (Physical Review Letters APS USA "Electroresistance and Electronic Phase Separation in Mixed-Valent Manganites").

Referring to Claim 1, Wu discloses a field-effect transistor, comprising: a ferromagnetic layer, having a film thickness of 50 nm or less (page 5998, Col. 2, lines 4-6), which is made of a Ba-Mn oxide showing ferromagnetism at 0°C or higher (page 5998, abstract, Col. 1, lines 12-17; Fig. 3(b)); a dielectric layer made of a dielectric material or a ferroelectric material (abstract), said ferromagnetic layer and said dielectric layer being bonded to each other, wherein the field-effect transistor has a bottom-gate structure (general structure shown in inset of Fig. 1).

Referring to Claim 4, Wu discloses all of the limitations of Claim 1 wherein the dielectric material or the ferroelectric material can be SrTiO_3 or $\text{Pb}(\text{Zr}_{1-z}\text{Ti}_z)\text{O}_3$, which is one of BaTiO_3 , SrTiO_3 , $(\text{Ba}_{1-y}\text{Sr}_y)\text{TiO}_3$, PbTiO_3 , $\text{Pb}(\text{Zr}_{1-z}\text{Ti}_z)\text{O}_3$ or Al_2O_3 , where y satisfies $0 < y < 1$ and z satisfies $0 < z < 1$ where y satisfies $0 < y < 1$ and z satisfies $0 < z < 1$ (abstract).

Referring to Claim 5, Wu discloses all of the limitations of Claim 1 wherein the dielectric material or the ferroelectric material can be SrTiO_3 , which is one of BaTiO_3 , SrTiO_3 , $(\text{Ba}_{1-y}\text{Sr}_y)\text{TiO}_3$, PbTiO_3 or Al_2O_3 , where y satisfies $0 < y < 1$ (abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Watanabe (U.S. Pat. 5,418,389).

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Referring to Claims 2 and 3, Wu discloses all of the limitations of Claim 1 but does not disclose wherein the Ba-Mn oxide composition is represented by $(La_{1-x}Ba_x)MnO_3$ where x satisfies $0.05 < x < 0.3$ or $0.10 < x < 0.3$. Watanabe discloses wherein the ferromagnetic layer is made of a Ba-Mn oxide whose composition is represented by $(La_{1-x}Ba_x)MnO_3$ where $x = 0$ to 0.3 , which encompasses the ranges of $0.05 < x < 0.3$ and $0.10 < x < 0.3$ ('389, Col. 6, line 21; Col. 7, line 26-27). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the Ba-Mn oxide as taught by Wu of the composition as taught by Watanabe because this combination improves the amount of change of electrical resistivity by the electric field ('389, Col. 6, lines 9-21).

Referring to Claim 7, Wu in view of Watanabe discloses all of the limitations of Claims 1 and 2, wherein the dielectric material or the ferroelectric material can be $SrTiO_3$ or $Pb(Zr_{1-z}Ti_z)O_3$ which is one of $BaTiO_3$, $SrTiO_3$, $(Ba_{1-y}Sr_y)TiO_3$, $PbTiO_3$, $Pb(Zr_{1-z}Ti_z)O_3$ or Al_2O_3 , where y satisfies $0 < y < 1$ and z satisfies $0 < z < 1$ (Wu, abstract).

Referring to Claim 8, Wu in view of Watanabe discloses all of the limitations of Claims 1 and 2, wherein the dielectric material or the ferroelectric material can be $SrTiO_3$, which is one of $BaTiO_3$, $SrTiO_3$, $(Ba_{1-y}Sr_y)TiO_3$, $PbTiO_3$ or Al_2O_3 , where y satisfies $0 < y < 1$ (Wu, abstract).

Referring to Claim 9, Wu in view of Watanabe discloses all of the limitations of Claims 1 and 3, wherein the dielectric material or the ferroelectric material can be $SrTiO_3$ or $Pb(Zr_{1-z}Ti_z)O_3$ which is one of $BaTiO_3$, $SrTiO_3$, $(Ba_{1-y}Sr_y)TiO_3$, $PbTiO_3$, $Pb(Zr_{1-z}Ti_z)O_3$ or Al_2O_3 , where y satisfies $0 < y < 1$ and z satisfies $0 < z < 1$ (Wu, abstract).

Referring to Claim 10, Wu in view of Watanabe discloses all of the limitations of Claims 1 and 3, wherein the dielectric material or the ferroelectric material can be SrTiO_3 , which is one of BaTiO_3 , SrTiO_3 , $(\text{Ba}_{1-y}\text{Sr}_y)\text{TiO}_3$, PbTiO_3 or Al_2O_3 , where y satisfies $0 < y < 1$ (Wu, abstract).

Telephone / Fax Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Earl N. Taylor whose telephone number is (571) 272-8894. The examiner can normally be reached on Monday-Friday from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Earl N. Taylor


David Nelms
Supervisory Patent Examiner
Technology Center 2800